CLAIMS

1. Apparatus for transferring a pattern from a template having a structured surface to a substrate carrying a surface layer of a radiation polymerisable fluid, said apparatus comprising a first main part and a second main part having opposing surfaces, means for adjusting a spacing between said main parts, support means for supporting said template and substrate in mutual parallel engagement in said spacing with said structured surface facing said surface layer, a radiation source devised to emit radiation into said spacing, a cavity having a first wall comprising a flexible membrane devised to engage said template or substrate, and means for applying an adjustable overpressure to a medium present in said cavity.

2. The apparatus as recited in claim 1, wherein said medium comprises a gas.

3. The apparatus as recited in claim 2, wherein said medium comprises air.

4. The apparatus as recited in any of the preceding claims, wherein said means for applying an adjustable overpressure is arranged to adjust the pressure to 1-500 bar.

5. The apparatus as recited in any of the preceding claims, wherein said cavity is defined by a part of the surface of said first main part, a flexible seal member arranged in and protruding from said first main part surface, and said membrane which engages said seal member.

6. The apparatus as recited in claim 5, wherein said membrane is disconnectable from said seal member, and devised to engage said seal member by application of pressure from said second main part.

7. The apparatus as recited in any of the preceding claims, wherein said membrane is transparent to a wavelength range of said radiation, said radiation

source being positioned behind said membrane.

8. The apparatus as recited in claim 5, wherein said membrane and at least a portion of said surface of said first main part is transparent to a wavelength range of said radiation, said radiation source being positioned behind said portion of said surface of said first main part.

9. The apparatus as recited in claim 8, wherein said portion of said surface of said first main part is made from quartz, calcium fluoride or any other pressure stable material being transparent to said radiation.

10. The apparatus as recited in any of the preceding claims, wherein said radiation source is devised to emit radiation at least in a wavelength range of 100-500 nm.

11. The apparatus as recited in claim 10, wherein said radiation source is devised to emit pulsating radiation with a pulse duration of 0.5-10 μs and a pulse rate of 1-10 pulses per second.

12. The apparatus as recited in any of the preceding claims, wherein said membrane consists of a polymer material.

13. The apparatus as recited in any of the preceding claims, wherein said membrane has a diameter or width of 50-1000 mm.

14. The apparatus as recited in any of the preceding claims, where said substrate acts as said membrane.

15. Method for transferring a pattern from a template having a structured surface to a substrate carrying a surface layer of a radiation polymerisable fluid, comprising the steps of:

- arranging said template and substrate mutually parallel with said structured surface facing said surface layer, between a stop member and a first side of a flexible membrane;
- applying an overpressure to a medium present on a second side of the membrane, opposite to said first side, for imprinting said pattern into said layer; and
- exposing said layer to radiation for solidifying said layer.

16. The method as recited in claim 15, wherein said medium comprises a gas.

17. The method as recited in claim 16, wherein said medium comprises air.

18. The method as recited in any of the preceding claims 15-17, comprising the step of:
- placing said membrane in direct engagement with said template or said substrate.

19. The method as recited in claim 18, comprising the step of:
- clamping said membrane at a peripheral portion thereof between said stop member and a seal member, thereby defining a peripheral wall for a cavity for said medium.

20. The method as recited in any of the preceding claims 15-19, comprising the step of:
- emitting radiation to said layer through said template or/and through said substrate, which template or/and substrate is/are transparent to a wavelength range of a radiation usable for polymerising said fluid.

21. The method as recited in any of the preceding claims 15-20, comprising the step of:
- emitting radiation to said layer through said membrane, which membrane is transparent to a wavelength range of a radiation usable for polymerising said fluid.

22. The method as recited in any of the preceding claims 15-20, comprising the step of:

- emitting radiation to said layer through said membrane, and through a transparent wall opposing said membrane, defining a back wall for a cavity for said medium, which back wall and membrane are transparent to a wavelength range of a radiation usable for polymerising said fluid.

23. The method as recited in any of the preceding claims 15-22, wherein the step of exposing said layer comprises the step of:

- emitting radiation from a radiation source within a wavelength range of 100-500 nm.

24. The method as recited in claim 23, comprising the steps of:

- emitting pulsating radiation with a pulse duration in the range of 0.5-10 μs and a pulse rate in the range of 1-10 pulses per second.

25. The method as recited in any of the preceding claims 15-24, comprising the step of:

- using said substrate as said membrane.

26. The method as recited in any of the preceding claims 15-25, comprising the step of:

- clamping said substrate and template together prior to arranging said template and substrate between said stop member and said flexible membrane.

27. The method as recited in any of the preceding claims 15-26, comprising the step of:

- applying a vacuum between said template and said substrate in order to extract air inclusions from said surface layer prior to exposing said layer to radiation.